

AD-A208 641

The views expressed in this paper are those of the author and do not necessarily reflect the views of the Department of Defense or any of its agencies. This document may not be released for open publication until it has been cleared by the appropriate military service or government agency.

STUDY PROJECT

STRATEGIC STABILITY THROUGH THE STRATEGIC DEFENSE INITIATIVE

BY

LIEUTENANT COLONEL JAMES T. REEVES

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

9 MARCH 1989

SDTICD
ELECTE
JUN 08 1989
[Signature]
H



U.S. ARMY WAR COLLEGE, CARLISLE BARRACKS, PA 17013-5050

89 6 08 012

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Strategic Stability Through the Strategic Defense Initiative		5. TYPE OF REPORT & PERIOD COVERED
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Lt Col James T. Reeves, USAF		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS U.S. Army War College Carlisle Barracks, PA 17013-5050		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS		12. REPORT DATE 9 March 1989
		13. NUMBER OF PAGES 66
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution is unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) From the 1950s the U.S. policy on nuclear strategic forces has been that of massive retaliation and mutual assured destruction, those policies are being reexamined by the leading edge of technology in spite of political direction. The advances in scientific and industrial research have caused a real and critical examination of the strategic stability issues surrounding the U.S. nuclear forces and military strategy. This paper focuses on what the role of the Strategic Defense Initiative research program will play in current and future nuclear stability issues. It addresses the historical policies that		

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

led to the current rationale for nuclear stability between the two superpowers and where they each stand on their strategic defense programs. The study then looks at what the Strategic Defense Initiative (SDI) was envisioned to be and what arms control pacts with the Soviets have done to influence our decisions to pursue this radically different deterrent strategy.

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

USAWC MILITARY STUDIES PROGRAM PAPER

STRATEGIC STABILITY THROUGH THE STRATEGIC DEFENSE INITIATIVE

AN INDIVIDUAL STUDY PROJECT

by

Lieutenant Colonel James T. Reeves, USAF

Colonel Mark Walsh
Project Advisor

**DISTRIBUTION STATEMENT A: Approved for public
release; distribution is unlimited.**

U.S. Army War College
Carlisle Barracks, Pennsylvania 17013
9 March 1989

**The views expressed in this paper are those of the
author and do not necessarily reflect the views of
the Department of Defense or any of its agencies.
This document may not be released for open publication
until it has been cleared by the appropriate military
service or government agency.**

ABSTRACT

AUTHOR: James T. Reeves, Lt Col, USAF

TITLE: Strategic Stability Through the Strategic Defense Initiative

FORMAT: Individual Study Project

DATE: 9 March 1989 PAGES: 63 CLASSIFICATION: Unclassified

From the 1950s the U.S. policy on nuclear strategic forces has been that of massive retaliation and mutual assured destruction, those policies are being reexamined by the leading edge of technology in spite of political direction. The advances in scientific and industrial research have caused a real and critical examination of the strategic stability issues surrounding the U.S. nuclear forces and military strategy. This paper focuses on what the role of the Strategic Defense Initiative research program will play in current and future nuclear stability issues. It addresses the historical policies that lead to the current rationale for nuclear stability between the two superpowers and where they each stand on their strategic defense programs. The study then looks at what the Strategic Defense Initiative (SDI) was envisioned to be and what arms control pacts with the Soviets have done to influence our decisions to pursue this radically different deterrent strategy.



Accession For	
NTIS GRA&I	<input checked="checked" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution/	
Availability Codes	
Avail and/or	
Dist	Special
A-1	

TABLE OF CONTENTS

	page
ABSTRACT.	ii
CHAPTER I. INTRODUCTION.	1
II. HOW WE GOT TO WHERE WE ARE.	5
III. STRATEGIC DEFENSE INITIATIVE, A RESEARCH PROGRAM	11
President's Speech.	11
Goals	13
IV. ARMS CONTROL AND ITS EFFECTS.	17
1972 Anti-Ballistic Missile Treaty.	20
ABM Research.	21
ABM Treaty Enhances Negotiations.	22
Soviet Violations and ABM Deployment Status.	22
V. SOVIET DOCTRINE, SOVIET BALLISTIC MISSILE DEFENSE AND SOVIET REACTION TO THE U.S. SDI . .	30
Soviet Strategic Defense Doctrine and Arms Control.	31
Soviet Ballistic Missile Defenses	35
Soviet Reaction to the U.S. SDI Program . . .	37
VI. THREATS AND MAINTENANCE OF STRATEGIC STABILITY.	44
Critics of the SDI.	45
Why Not the SDI?.	50
VII. CONCLUSION.	54
BIBLIOGRAPHY.	60

STRATEGIC STABILITY THROUGH THE STRATEGIC DEFENSE INITIATIVE

CHAPTER I

INTRODUCTION

Our objectives in arms reductions are to preserve deterrence in the near-term and begin a transition to a more stable world, with greatly reduced levels of nuclear arms and an enhanced ability to deter war based upon the increasing contribution of non-nuclear defenses against offensive nuclear arms.

Caspar Weinberger
Secretary of Defense

If nuclear deterrence should fail...the alternative is not acceptable. Current technology has pushed the world beyond its 1950's understanding of deterrence. What once defined deterrence has been shaken through rapid advances in military and non-military fields of research. Computing power, sensor capabilities, and weapon effects have become an order of magnitude better than what they were in 1950, and for that matter in 1972 when the Anti-Ballistic Missile (ABM) Treaty was signed. The world based deterrent strategy on mutual vulnerability of the superpowers. Vulnerability was defense. There must be a better alternative.

The premise of self-defense pervades every precept of common law and survival that man has ever known. The premise for defense against nuclear missiles is not any different. Technology is the difference. In the way of an analogy, would an olden Knight accept a blow from another's weapon without

parrying? Of course not, he would defend himself. Our situation during the last forty years has preserved this notion that, should a nation be attacked by nuclear weapons its only option would be to attack the aggressor in kind, assuming the attacked had the will and the resources left to do so. In other words, that olden Knight must stand unmoving and be struck. Then if he had the strength to return battle he could do so while his opponent stood still. Only offensive blows could be delivered without parrying. How much longer must such a ludicrous set of rules exist?

The reality of nuclear weapons has placed the East and the West in a dangerous situation where parrying has not been either viable or acceptable. Both sides have sought agreements to make sure neither took advantage of the other to reduce their own vulnerability. Conceived in the 1950s the current defensive philosophy, however, maintains that if a country attacks another with weapons of mass destruction, the attacked country would respond with its retaliatory forces to inflict unacceptable levels of damage on the aggressor. It is this threat of retaliation that has kept an aggressor in check and encouraged nuclear stability.

This retaliatory concept has not at any time reduced the number of strategic nuclear weapons in the history of modern combat. Only the reduction of theater nuclear weapons through the Intermediate-range Nuclear Forces (INF) Treaty has reduced the numbers of weapons in a theater and not at the strategic level of

massive retaliation. Deterrence is still based on massive retaliation in spite of the INF Treaty actions.

What this concept of strategic force retaliation has done is initiate an arms race that has shown no effort to correct or curb itself. This is in spite of NATO actual reductions and announcements to reduce nuclear stockpiles, the U.S. to unilaterally destroy its fleet of Titan-II missiles, or the USSR's and the U.S. agreement on the INF reductions. While these events have taken place, East and West have undertaken force modernization programs to offset lost capability by those actions. The jury is out on whether either side will recapture the lost capability through modernization which both are working so hard to attain.

President Reagan's announcement on 23 March 1983 that the U.S. would seek other alternatives to this continued arms race and anachronistic approach to stability, marked a historic moment. The question to consider from his speech is whether technological breakthroughs alter our earlier assumptions and methodologies to maintain strategic stability. While not a completely new idea to defend against nuclear attack by attacking nuclear armed missiles while they are in flight, previous technology could not support such a defensive posture. Actually the cure was almost as bad as the effect because the intercepting vehicles used small nuclear weapons to destroy the incoming warheads just above the defended area. Regardless of whether or not nuclear fallout was derived from attacking enemy missiles or our own defensive missiles, the bottom line was that fallout

still killed Americans. Since that time, circumstances and capabilities have dramatically changed.

The Strategic Defense Initiative (SDI) looks into alternatives to maintain deterrence and reduce dependence on nuclear offensive systems. This study will examine how the circumstances of mutual vulnerability and assured destruction have left few alternatives to SDI. It will examine if the SDI helps our strategic deterrence capability and stability which has changed over the past 40 years between the United States and the Soviet Union. In order to understand exactly what role the SDI research program will play in strategic nuclear deterrence, it is necessary to have an understanding of how we got to the present deterrent posture, what players and actors are trying to influence the program and why. The study will then look at what the SDI was envisioned to be and what arms control pacts with the Soviets have done to influence our decisions to pursue this radically different deterrent strategy. Finally, it will conclude with a look at some of the issues surrounding the SDI and its affects on stability.

ENDNOTES

1. Casper W. Weinberger, The Potential Effects of Nuclear War on the Climate, p. 13.

CHAPTER II

HOW WE GOT TO WHERE WE ARE

Strategic deterrence has changed significantly from the Eisenhower administration when massive retaliation was the strategy. There wasn't a need for any other strategy because the United States had the monopoly on nuclear weapons and the reliable, credible means to deliver them. Although the world has accepted the presence of nuclear weapons, the philosophy behind their use has been the subject of great debates. Any discussion concerning the SDI and arms control must first begin with a brief review of where nuclear deterrence and mutual vulnerability began and how it has maintained stability.

America has for the last 40 years based its theory of nuclear retaliatory deterrence on being able to inflict unacceptable levels of damage on an aggressor. As mentioned, this was based on our undeniable nuclear weapons advantage, numerically and qualitatively, over the Soviet Union. During the Eisenhower administration, the theory of massive retaliation took form. The United States had a virtual monopoly and superiority in nuclear forces. This advantage, however, would not last and ended quicker than expected.

America's nuclear weaponry advantage, while impressive, was being whittled away by Soviet advances in nuclear offensive systems. The Soviet's growing military technological base enabled them to make several advances in rocketry and nuclear

weapon's developments. This severely altered strategic thinking. United States' superiority had to be reconsidered in full light of Soviet advances.² By the 1960s both sides had achieved a strong nuclear capability which formed a basis for their mutual deterrence.³

The Kennedy administration viewed the previous years of nuclear deterrence as "inflexible, making U.S. power 'irrelevant,' and urged what would become the strategic approach of 'flexible response'.⁴" As then Secretary of Defense, Robert S. McNamara explained, this approach would require "unchallenged superiority at every level of force."⁵ This meant that our forces must be able to respond to varying threats in different theaters of conflict and be able to win. McNamara did not believe that the Soviets would put any credibility in the previous defense strategy when "even the American people did not believe."⁶ The strategy must be a "controlled, flexible response...versatile enough to meet with appropriate force the full spectrum of possible threats...from guerrilla subversion to all-out nuclear war."⁷

This strategy, however, failed to contain communism in Southeast Asia and other parts of the globe, and plans for building up American nuclear forces were frozen during the last years of McNamara's stay in the Pentagon. During this period, the Soviets continued to build-up their strategic rocket forces and submarine missile forces. Parity was just around the corner. Even then American interest was focusing on missile defenses as a better way to defend the United States. These defensive systems

during the 1960s, however, were quickly scrapped as parity was met. "It was feared, [defensive systems] would only upset the emerging balance between U.S. and Soviet forces." Achieving a defensive capability, such as NIKE-X, to defend against attacking aircraft and missiles might tempt the Soviets to initiate a "quick strike" or begin an offensive arms race to counter the U.S. defense program. (We see this same argument today over the SDI.) A possible U.S. rationale for a quick Soviet strike would be akin to the overused adage of "use-them-or-lose-them." Such a possibility was regarded by the U.S. because Soviet technology could not compete with the U.S. qualitative lead. On the other hand, an offensive arms race designed to overwhelm or defeat the proposed U.S. defenses may be more plausible but not in either's interest of preventing a never ending spiral of arm races. Therefore, both sides were better off, from the U.S. perspective, with the strategy of mutual destruction and our defensive program was well on the road to elimination.⁸

Because of the technology of the era, weapon delivery was not accurate to the degree necessary to give either side the decisive capability to destroy the other's nuclear retaliatory capability. Accuracies were stated in thousands of feet or kilometers; unlike today's systems quoted in hundreds of feet or tens of meters. The current concept, Mutual Assured Destruction (MAD), is based on the premise that, after suffering an all-out nuclear first strike, either superpower would still have the retaliatory systems available to destroy its opponent. Again, it was weapon system technology in the form of poor accuracy that assured

either side would have systems remaining to retaliate. This earlier technology made it an assured fact that the attacked could respond in kind and inflict unacceptable damage to the attacker. The United States and the Soviet Union have had this capability to destroy the other's industrial, economic, cultural, military, governmental, and population bases after suffering an initial attack. It became an accepted fact and was fundamental to the formulation of our national military strategy. MAD deters an aggressor from launching an attack or allowing a crisis to grow to the nuclear level. Former Secretary of Defense Wineberger in describing MAD stated, "MAD advocates actions to make nuclear war as horrible as possible, since that makes it as unthinkable as possible."⁹

Together with mutual assured destruction, mutual vulnerability has existed between both parties for most of the past 40 years. This situation in MAD became the basis for the "stability" between the Soviet Union and the U.S. It was during the McNamara tenure as Secretary of Defense that our forces shifted from damage limiting to being able to deter an attack against the United States. This apparent step away from a "winning" policy took us to a strategy of maintaining a deterrent posture based on a "second strike" capability.¹⁰

The diminishing capability for the U.S. to respond to a first strike by the Soviets in the 1980s results from several technological factors. As stated earlier, accuracy was a serious limitation and both knew sufficient retaliatory forces would remain after a first strike to inflict unacceptable losses on the

other. This mutual vulnerability in MAD became the centerpiece for deterrent stability. In 1979 Secretary of Defense Harold Brown explained:

In the interest of stability, we avoid the capability of eliminating the other side's deterrent, insofar as we might be able to do so. In short, we must be quite willing -- as we have been for some time -- to accept the principle of mutual deterrence, and design our defense posture in light of that principle.

Capability to destroy an opponent's retaliatory forces became "destabilizing." Similarly, any effort to defend against such an attack was considered destabilizing. The premise upon which MAD is based requires that both sides have offensive forces to retaliate to an attack. MAD and stability were synonymous! Henry Kissinger explained, that "the historically amazing theory developed that vulnerability contributed to peace and invulnerability contributed to risks of war."¹²

The full knowledge that any conflict which escalated to the nuclear level would be met by a retaliatory strike is central to the philosophy of deterrence.¹³ The SDI, however, asks the hard questions: Is there a better way to maintain deterrence and keep the peace? Is there a way to rid us of the requirement to remain vulnerable to a nuclear strike where our only option is to respond with weapons in kind.

ENDNOTES

1. Daniel O. Graham, Lt Gen, USA (Ret) and Gregory A. Fossedal, A Defense That Defends, pp. 6-7.
2. Ibid., p. 19.
3. Zbigniew Brzezinski, Game Plan, p. 162.

4. Graham, p. 21.
5. Ibid.
6. Ibid.
7. Ibid., p. 22.
8. Ibid., p. 24.
9. Casper W. Wineberger, "U.S. Defense Strategy," Foreign Affairs, Spring 1986, p. 680.
10. Keith B. Payne, Strategic Defense: "Star Wars" in Perspective, p. 30.
11. Ibid., p. 31.
12. Ibid.
13. Wineberger, "U.S. Defense Strategy", Foreign Affairs, p. 681.

CHAPTER III
STRATEGIC DEFENSE INITIATIVE
A RESEARCH PROGRAM

Strategic defense is not a new concept or a new technological endeavor that the United States is pursuing alone. It is not a new brain child of the Reagan administration, either. Its roots date back to the Eisenhower administration. Nineteen-fifty's programs were examined to decide if the U.S. could be defended from nuclear missile attack. Even then controversy surrounded early efforts. Military strategy was unclear on which was better -- massive retaliation, defense, or some combination. These early ideas, however, were dropped for a variety of reasons ranging from budgetary to technological to political. The present controversy surrounding the rebirth of strategic defense is deeply rooted in the 1972 Anti-Ballistic Missile (ABM) Treaty and the technological advances that have improved both nations' offensive capabilities. These advances and new vulnerabilities have altered the way we think about Mutual Assured Destruction and strategic stability. These circumstances and advances led to President Reagan's announcement of the SDI research program.

PRESIDENT'S SPEECH

Early efforts to develop and deploy a defense against ballistic missiles have been long considered profoundly better than continuing to pursue the nuclear arms race. Even though the

United States abandoned these missile defense efforts almost 20 years ago because of political and technological problems, their preference over an offensive capability has always fit our national conscience.

During the late 1970s, a rebirth of strategic defenses was undertaken by several "technologists and students of strategic weaponry."¹ The Reagan administration with its military modernization plans did much to revitalize the defense establishment and improve our nation's military capability. Several senior advisors brought to the President the renewed notion of strategic defenses. His closest advisors, George Keyworth, science advisor, Robert Cooper, from Department of Defense (DoD), and Robert MacFarlane, National Security Advisor, convinced him "that given the state of technology, anti-missile defenses could...be researched in the 1980s, developed in the 1990s, and deployed in the next millennium."² Thus was born the SDI research program.

The President's television address on 23 March 1983 initiated a renaissance of the defensive debate for protection against a Soviet knockout first strike. The speech challenged the technical and scientific community to pursue research which would lead to a highly effective defense against ballistic missiles. The over-arching goal of the President's challenge was the fervent hope of "rendering these nuclear weapons impotent and obsolete."³ Additionally, this research had the "aim of finding ways to provide a better basis for deterring aggression, strengthening stability and increasing security...."⁴

GOALS

The SDI is a program for research into ways to provide a defensive screen against a Soviet or other nation's nuclear attack against the free world. It is not a program to produce and deploy a defensive system. Many critics focus on the misconception that the SDI is a program to deploy defenses; it is not. One day in the future, however, a decision may be made to deploy a SDI system. The current program is investigating ways to defend against missile attack so that future decision-makers will have the necessary information to make informed and technologically feasible decisions regarding deployment. This SDI research information would then be taken in concert with existing and new arms control agreements to achieve the best national military strategy.

A goal of the SDI, as contained in Presidential documents, is the "very real possibility that future Presidents will be able to deter war by means other than threatening devastation to any aggressor -- and by a means which threatens no one.⁵ The President's goal in the SDI,

is to identify the technological problems and to find the technical solutions so that we have the option of using the potential of strategic defenses to provide a more effective, more stable means of keeping the United States⁶ and our allies secure from aggression and coercion.

The goal as stated in the Strategic Defense Initiative Organization (SDIO) April 1988 report to the Congress is:

to conduct a vigorous research and technology program that could provide the basis for an informed decision regarding the feasibility of eliminating the threat posed by nuclear ballistic

missiles of all ranges and increasing the contribution of defensive systems to U.S. and allied security. The Program is being conducted in compliance with all existing treaty obligations. Program emphasis is on non-nuclear technologies."7

Additionally, the SDI plays a role in national security objectives. While military forces can support these objectives to deter hostile attack and deter coercion in cooperation with our allies and reduce the long term reliance on nuclear weapons, the goals of a defense against ballistic missiles support our national strategy in several ways. First, a SDI defense enhances deterrence by denying confidence to our adversaries in their ability to initiate a successful attack. Second, strategic defenses would limit the damage to the United States and our allies from nuclear missile strikes. This would allow the U.S. to sustain and support our forces and allies in overseas theaters of operations. Finally, it would deny the Soviet objectives to "defeat and occupy NATO, neutralize the U.S., and dominate the postwar world."⁸

Notwithstanding all of these goals, there are many who criticize the SDI. One criticism focuses on our allies. SDI is not meant to imply that the United States will forget its current responsibilities to ourselves or to our allies. The President was clear in saying that,

we recognize that our allies rely upon our strategic offensive power to deter attacks against them. Their vital interest and ours are inextricably linked -- their safety and ours are one. And no change in technology can or will alter that reality.⁹

Some would espouse that SDI is a means to move war into space. This is truly not the case. SDI, as Mr Keyworth, Presidential

Science Advisor states, is not "a short-sighted program to use modern technology simply to move war into space; nor is it a prelude to a new arms race. It is in fact, a step towards making the world safer from nuclear weapons."¹⁰ Another criticism centers on the controversy surrounding the 1972 ABM Treaty. For it was this treaty which strove to maintain the mutual vulnerability each side had, to ensure stability through an offensive capability. Other treaties and protocols such as Strategic Arms Limitation Talks (SALT) I, the unratified SALT II, and the Interim Agreement, have all complicated the arms control process and brought serious debate to the SDI program and arms control. The goal to be achieved is for meaningful and forward reaching arms control initiatives to reduce the threats and stabilize the relationship between the superpowers rather than add to negativism and instability.

ENDNOTES

1. Senator Malcomb Wallop and Angelo Codevilla, The Arms Control Delusion, p. 159.

2. Ibid.

3. Daniel O. Graham, Lt Gen, USA (Ret) and Gregory A. Fossedal, A Defense That Defends, p. 145.

4. Ronald Reagan (President), "A Message From the President," Defense Science 2003+, pp. 13-14.

5. Colin S. Gray, Dr., "Emerging Policy Triad," Defense Science 2003+, Apr/May 1985, p. 29.

6. Ibid.

7. U.S. Department of Defense, Strategic Defense Initiative Organization, Report to Congress on the Strategic Defense Initiative, p. 2-1.

8. Ibid., pp. 1-6 -- 1-8.

9. Graham, p. 145.

10. George A. Keyworth, "Strategic Defense: Catalyst for Arms Reductions," in Arms Control and Strategic Stability, ed. by William T. Parsons, p. 17.

CHAPTER IV

ARMS CONTROL AND ITS EFFECTS

In order for arms control to have meaning and credibly contribute to national security and to global or regional stability, it is essential that all parties to agreements fully comply with them. Strict compliance with all provisions of arms control agreements is fundamental....

President Ronald Reagan

Arms control has not been the panacea some have hoped for or many others still propose as the solution to this planet's nuclear weapons woes. On the one hand, arms control has had many positive effects but some of these arms control successes have had significant problems with verification and compliance. Regarding the SDI, if a Presidential decision was made to deploy an SDI system, arms control would have to be an essential element in the deployment process. In achieving our goals of a stable and more secure environment, arms control must be an integral part for making the transition from mutual vulnerability to "mutual assured survival." Critics postulate that the SDI and arms control are mutually exclusive, while the Reagan Administration said that the two were supportive.² What may be impossible to measure in the relationship between SDI and arms control is the effect SDI has had on getting the Soviets back to the negotiating table in Geneva for serious arms reduction discussions. Whether the Soviets came back to the table to limit SDI or because they have some fear of our technological capability to develop a strategic defense is not important. What

is important is that the Soviets are back at the table and both sides are talking about arms control.

The generally accepted objectives of arms control center on three basic ideas:

1. To reduce the possibility of war;
2. To reduce the destructiveness of war;
3. To minimize the cost of maintaining an adequate military establishment³

One can not argue against the first objective, to reduce the possibility of war, as the paramount goal of arms control. This objective is one every soldier desires; for achieving this objective means -- peace. But, if war does come then the next objective of arms control is to limit the scope and devastation it brings. If through arms control, war's destruction can be limited to only those places where battles are fought, then there is some good in the process. On the other hand, should the scope of the war be such that it has no bounds due to unlimited war materiel, significant collateral damage to civilians and innocent third parties is likely to result.

In this time of increased costs, deficit spending, raising economic demands, pressure is high on the Congress and the Administration to cut spending. Adding to this pressure to reprioritize funds has been, and will continue to be, successful arms control negotiation activities. The assumption being: less forces and/or capability are necessary to meet a less threatening world brought about through successful arms reductions. Often defense resources, including those not associated with the arms control agenda, get the budget axe. This is primarily due to a

perception that the reduced threat achieved by the arms control process spills over into other defense areas.

Arms control objectives have great impact on the way the United States handles its budget and its relations with other nations. The economic consequence of arms reduction, however, is not limited to the United States. The new openness in the Soviet Union has been similarly affected. General Secretary Gorbachev's speech at the United Nations on 7 December 1988 to reduced half a million troops and 10,000 tanks was a public acknowledgement that the pressures to have an economical force are also at work in his country.⁴

The U.S. approach to arms control has not been a real success story especially relating to the second and third objectives above. It is hard to measure the effectiveness of any arms control treaty or practice to deter nuclear war (since there has not been one against which to measure the deterrence effectiveness). The other two objectives are not totally shrouded in fog. Take for example the SALT I Treaty.

Generally, it is accepted that the SALT I Treaty was designed to limit the boundless growth of nuclear missiles in the U.S. and the Soviet Union. The treaty put a cap on the numbers of missiles either nation could deploy. This satisfied the second arms control objective thus eliminating an arms race and the spending necessary for such a race--the third objective. What was not covered by the treaty was a change in the technological capability that allowed both sides the ability to MIRV (multiple independently-targetable reentry vehicles) their nuclear

missiles. The effect was to get around the ceiling placed on the numbers of missiles by putting more warheads on each launch vehicle. SALT I formalized the mutual vulnerability philosophy and retaliatory forces as the method to achieve deterrent stability.

The 1979 SALT II Treaty which was not ratified by the United States but was complied with until 1986, had its share of arms control problems.⁵ The U.S., however, has "observed a political commitment to refrain from actions that undercut the SALT II Treaty so long as the Soviet Union does likewise."⁶ This treaty's ability to reduce arms and limit nuclear weapon growth was replete with problems. The Soviets could build up, and the U.S. remained static. Furthermore, the Soviets have encrypted missile test launch data, tested and launched a second new missile (SS-X-25) and developed the SS-16 missile, all "probable violations" of the SALT II Treaty.⁷

1972 ANTI-BALLISTIC MISSILE TREATY

The "SALT I agreement capped nearly 10 years of arms talks" but at the same time initiated a "series of reciprocal...arms control orientated threats that came to dominate the superpower relationship through the late 1970s and the 1980s."⁸ Both the Soviets and the U.S. had as their objective to limit the other's activities while furthering its own. The ABM Treaty was no exception.

The ABM Treaty was signed as part of the 1972 SALT I Treaty and amended in 1974. The basic provisions of the Treaty provide

that neither country may deploy more than 100 ballistic missile interceptors. Additionally, these interceptors may only be deployed at one location. (The 1972 treaty allowed two sites but the 1974 amendment reduced the locations to one.) An ABM system may defend either an offensive missile site or nation's capitol.⁹

The major premise for signing the ABM Treaty was to codify a condition of stability predicated upon societal vulnerability to nuclear attack.¹⁰ Having such a limited ballistic missile defense system was to insure that neither side could totally destroy the other's retaliatory forces or political and military leadership.

ABM RESEARCH

The Treaty does not limit research on defensive systems. To this point, then Secretary of Defense Laird testified before the Senate that we would "vigorously pursue a comprehensive ABM technology program."¹¹ Similarly the Soviet Union Minister of Defense Grechko stated after signing the ABM Treaty and speaking before the Soviet Presidium, the Treaty "places no limitations whatsoever on the conducting of research and experimental work directed towards solving the problem of defending the country from nuclear missiles."¹² The ABM Treaty, however, does prohibit deployment. To progress to that point, the Treaty must be either renegotiated or abrogated (which either party may do by announcing its intentions six months prior to dissolution).

ABM TREATY ENHANCES NEGOTIATIONS

Controversy has surrounded the ABM Treaty since its inception in 1971. Many in the State Department and the Arms Control and Disarmament Agency argued that "SALT would be given impetus by slowdown in our ABM program." Henry Kissinger took another tack and "maintained exactly the opposite, that an American ABM program was essential to any hopes for Soviet acceptance of offensive limitations."¹³ Regardless, the ABM Treaty was signed in 1972 and was designed to ensure that both sides maintained a level of "mutual vulnerability." Zbigniew Brzezinski stressed that, "the 1972 Anti-Ballistic Missile Treaty, [was] based on the now anachronistic strategic assumptions of the era of MAD." He indicated that there must be a rethinking of the entire ballistic missile situation and only then can mutual stability through negotiations be assured.¹⁴

SOVIET VIOLATIONS AND ABM DEPLOYMENT STATUS

The list of Soviet violations of the ABM Treaty are numerous. They range from testing surface to air missiles (SAM) in an ABM mode, ABM camouflage, falsification of ABM deactivation, creation of a new ABM test range without prior notification, deployment of a rapid deployable mobile ABM, and deployment of battle management ballistic missile radars.¹⁵

Regarding radars used to support ballistic missile defenses, either side under the Treaty can construct radars that are along the periphery of the country and oriented outward. The Soviet

Union deployed a new radar which does not conform to the Treaty criteria. It is not located within 150 kilometers of their current ABM system. It is oriented, not toward the Soviet's closest border but across 4,000 kilometers of Soviet territory to the northeast. The Soviets maintain that this radar at Krasnoyarsk is for space tracking. Its orientation and design, however, make it ideal to complete a nationwide ballistic missile defense tracking and targeting system. Obviously, such a system would be in violation of the ABM Treaty. ¹⁶

It would be appropriate to mention at this point that General Secretary Gorbachev at the United Nations on 7 December 1988 did indicate that the Soviet Union would move to resolve the issue over the Krasnoyarsk radar facility with the United States. He "promised to 'dismantle' and 'refit' parts of the radar as part of its conversion to an international space center under U.N. auspices." ¹⁷ If the site is dismantled, as the U.S. position maintains is the only solution, it would be a significant step in correcting one of the many Soviet non-compliance treaty issues.

With the world's only operational anti-satellite (ASAT) system, the Soviets have the capability to put at risk some of the western nations most critical defense satellites. The SL-11 launch vehicle has been routinely tested with other payloads to verify vehicle reliability but actual ASAT warheads and intercepts have not been operationally conducted for several years. The Soviet nuclear tipped GALOSH ABM interceptor also has an inherent ASAT capability. The U.S. ASAT program was cancelled by Congress several years ago. This cancellation leaves the U.S.

unable to respond to Soviet attacks on our satellites in times of crisis without either escalating the response or submitting to coercion.

The Soviet Union has deployed the only operational ballistic missile defense system in the world. In 1989 a new modernized Moscow ABM system will be fully operational. A two-layered defense system will consist of long-range modified GALOSH ABM to engage reentry vehicles outside of the atmosphere and the GAZELLE high acceleration, short range missile to counter reentry vehicles entering the atmosphere. The new phased-array radar at Pushkino which will have a 360 degree area of coverage will add tremendously to the Moscow ABM system's capabilities to engage multiple targets and take advantage of the upgraded ABMs.¹⁸

Also unfolding in the Soviet ABM architecture are several worrisome issues that could be a signal that they are about ready to break out of the ABM Treaty. The Soviets have since 1970 finished or begun construction on a total of nine large phased-array radars. In addition to providing increased missile warning capabilities which duplicate older, existing HEN HOUSE radars, these new radars can provide an ability to network the entire warning system together and provide detailed detection and tracking information needed for a nationwide ABM system.¹⁹ Other sources indicate that the Soviets have completed programs which facilitate rapid production of interceptor missiles. There is also reported to be an ability to construct ABM sites in a matter of months rather than years as intended by the 1972 ABM Treaty. The long lead items, acquisition radars, have already been

constructed. Stockpiling interceptor missiles and launchers is a possibility but unverifiable.²⁰

The ABM Treaty specifically forbids either party from developing a mobile (land, sea or air) ABM system. Article III of the Treaty forbids either party to have more than 100 ABM launchers and no more than 100 ABM interceptors at launch sites. The Soviets' actions to dramatically upgrade their phased-array radars and to develop a production capacity to manufacture ABM missiles in quantities could signal an intention to break out of the ABM Treaty with a national strategic defense system.

The Article IV of the Treaty also forbids either party from developing a capability to launch more than one missile per launcher at a time. The article also prohibits developing launchers with an "automatic or semi-automatic or similar system to rapid reload of ABM launchers."²¹ DoD reports: "the silo-based [ABM] launchers may be reloadable" and "a 'rapid-reload capability' for only the SH-08 [GAZELLE]" is more likely.²² Additionally, "unnamed U.S. officials have reportedly described multiple launches from the same [ABM] silo, without any reloading or surface launch equipment observed. For some, this has implied 'an underground automatic reload system'.²³" The apparent conflict with the treaty to be resolved could be purely semantics. Is "rapid-reload" putting another missile on the launcher in five, ten, thirty or ninety minutes, or is it one, six or twenty-four hours? In the DoD reported case the "rapidness" of the reload, if done within the "revisit time of a reconnaissance satellite (perhaps ninety minutes or more), might

explain the reports on the absence of observable reloading or launch equipment between launches." ²⁴ Does this violate the intent of the ABM Treaty? The treaty prohibits more than one hundred missiles at the launch site, therefore, missiles in an underground system or within close proximity violates the stipulations in Article III. If verified, a significant reload capability would drastically alter the mutual vulnerability aspect of deterrence by which the U.S. has stood. This would also demonstrate another case where the Soviets have refused to remain in compliance with existing treaties; how can we expect them to honor future commitments?

The obvious U.S. concern is that the Soviet Union could have a national ABM system in place well before the U.S. could deploy anything resembling a defensive system. For example: the Soviet mobile SA-10, which has an ABM capability, could complete a national defense in less than ten years. There are 800 SA-10s deployed and approximately 40 in the vicinity of Moscow believed to be in a strategic role. This represents a formidable Soviet capability for which the U.S. has no comparable national air defense. The SA-12 mobile system is also reported to be capable of intercepting incoming reentry vehicles. It is described to have been tested against intermediate range ballistic missiles, SLBMs and ICBMs. Additionally, a Library of Congress study published in 1979 concluded that "the Soviets have tested improved long-range ABM missiles with greater acceleration; an interceptor that can loiter in space,...and an interceptor utilizing an infrared homing system...." ²⁵

Looking to more exotic systems, the Soviets are the leaders in laser weapon programs. These date back to the early 1960s and are much larger than those of the United States. Their anti-satellite laser weapon program "has developed to the point where they already have a test model system which has been used to interfere with U.S. satellites."²⁶ Since the 1970s the Soviets have been rapidly pursuing research and experimentation in directed energy weapons.

The Soviets have been pursuing since the 1960s research into space based weapons using particle beams, radio frequency signals, and kinetic energy. Their work in ion sources and radio frequency quadrupole accelerators for particle beams has been impressive. Their work published in open literature has aided the U.S. understanding of particle beams for scientific and defensive purposes.

It is sufficient to say that the Soviet Union has been aggressively researching and deploying systems which will give them a ballistic missile defense system. Their production capabilities and research facilities are unmatched. While a defense race is not advocated, technology will advance and the United States can not afford to sit back and wait for the Soviets to break out of the ABM Treaty with a national defense. Failing to understand Soviet strategy and to answer Soviet defense programs would gravely affect the stability of nuclear deterrence. Without arms control regimes covering both offensive and defensive strategies the balance of power will continue to shift and become more menacing to world peace.

ENDNOTES

1. Ronald Reagan (President), Letter to Congress: The President's Unclassified Report to the Congress on Soviet Noncompliance with Arms Control Agreements, 1 Feb 1985, p. 2.
2. Keith B. Payne, Strategic Defense: "Star Wars" in Perspective, p. 141.
3. Keith B. Payne, "Arms Control Policy Stability and Compliance," in Arms Control and Strategic Stability, ed. by William T. Parsons, p. 49.
4. Michael Dobbs, "Gorbachev Announces Troop Cut of 500,000," Washington Post, 8 Dec 1988, p. A1.
5. Jan M. Lodal, "An Arms Control Agenda," Foreign Policy, Fall 1988, p. 153.
6. Reagan, p. 6.
7. Ibid., pp. 6-7.
8. William H. Kincade, "Arms Control or Arms Coercion?", Foreign Policy, Spring 1986, p. 36.
9. Payne, Strategic Defense: "Star Wars" in Perspective, p. 35.
10. Payne, "Arms Control Policy Stability and Compliance," p. 52.
11. Kenneth Adelman, Dr., "The Impact of Space on Arms Control," Defense Science 2003+, Apr/May 1985, p. 42.
12. U.S. Department of Defense, Soviet Strategic Defense Programs Report, p. 7.
13. Henry Kissinger, The White House Years, p. 813.
14. Zbigniew Brzezinski, Game Plan, p. 167.
15. Daniel O. Graham, Lt Gen, USA (Ret) and Gregory Fossedal, A Defense That Defends, pp. 131-132.
16. U.S. Department of Defense, Soviet Military Power, 1986, p. 43.
17. Dobbs, p. A1.
18. U.S. Department of Defense, Soviet Military Power, An Assessment of the Threat, pp. 55-56.
19. Ibid.

20. U.S. Department of Defense, Soviet Military Power, 1986, p. 45.
21. Nicholas L. Johnson, Soviet Military Strategy in Space, pp. 254-255.
22. David S. Yost, Soviet Ballistic Missile Defense and the Western Alliance, pp. 35-36.
23. Ibid.
24. Ibid., p. 37.
25. Steven P. Adragna, On Guard for Victory: Military Doctrine and Ballistic Missile Defense in the USSR, pp. 35-36.
26. Payne, Strategic Defense: "Star Wars" in Perspective, pp. 57-58.

CHAPTER V

SOVIET DOCTRINE, SOVIET BALLISTIC MISSILE DEFENSE AND SOVIET REACTION TO THE U.S. SDI

I think that a defensive system, which prevents attack, is not a cause of the arms race but represents¹ a factor preventing the death of people....

Premier Kosygin
1967

At this juncture it would be appropriate that some time be devoted to examining the issue of SDI and ballistic missile defense from our principle adversary's perspective.

The Soviet Union has had an effective program of ballistic missile defense for almost three decades. The earliest indications of Soviet activity with anti-ballistic missile systems were learned in February 1961 and confirmed in January 1963 when the commander of National Air Defense (PVO strany) said, "The problem of destroying enemy missiles inflight has been successfully resolved. We have developed and constructed the means for defense of the country from a nuclear attack by an opponent."² While this ABM system and announcement might primarily have been for foreign consumption, it does highlight the early and aggressive Ballistic Missile Defense (BMD) program the Soviets undertook. It was been approximately twelve years since they began a "considerable expenditure of resources to up-date and renew strategic defence systems."³ It is interesting to note that the Soviet's defense activities were begun before President Reagan's announcement of the SDI.

SOVIET STRATEGIC DEFENSE DOCTRINE AND ARMS CONTROL

Soviet emphasis has focused on defense as the essential element required in the survival of the nation state from a nuclear war. While offense and surprise should not be reduced in importance, the Soviet's place a premium on defensive capability both active and passive. Defense has been an integral part of their doctrine and military policy, which has three objectives:

1. Deter military confrontation with the West.
2. Hedge against deterrence failing, the USSR has developed force postures capable of limiting damage sustained by the Soviet homeland and defeating the enemy.
3. Soviet military forces in general, and nuclear forces in particular, were supposed to provide powerful political leverage to be used in the pursuit of various Soviet foreign-policy objectives.

Fundamentally, the Soviets hold that socialism and capitalism are completely incompatible and a struggle will always exist between the two. Should this struggle of social and political dogma expand into a situation where deterrence fails, the Soviet's

goal...in war must be nothing less than victory--meaning the total defeat of the United States and the preservation of the Soviet Union as a viable state...to dominate the postwar world. Mutual deterrence and assured destruction are, in the Soviet view, naive and dangerous concepts because they rest the country's fate upon the rationality and good will of the adversary. Instead the state must look to its own active defense.⁵

A damage limiting policy fits with strategic defense and is consistent with the Soviet thoughts in their literature of the 1960s. What is surprising is that except for a few air defense

officers, Soviet writings on BMD have been non-existent thereafter. By the 1970s, Soviet writings did acknowledge that nuclear war could become protracted; no longer short and over quickly. Therefore, what little did leak into literature still carried strategic offensive and defensive strategy as essential to the survival of the Soviet Union. What has been missing heretofore was the outspokenness of the Soviets on how capable they were in defending their homeland from a nuclear missile attack by the West.⁶

Soviet nuclear forces were and are essential to the success of their conventional forces in a protracted war. If Western retaliatory forces could not be totally destroyed during the Soviet attack then a ballistic missile defense would be the thaumaturgic forces to assure their success should deterrence fail and a nuclear confrontation ensue. Moscow's signing of the "ABM Treaty in 1972 was not a reflection of [Soviet] adoption of the Mutually Assured Destruction (MAD) doctrine, but rather a recognition that the Soviet Union could not then win an ABM arms race. Philosophically, the Soviets view[ed] BMD as an integral part of their overall civil defence programme."⁷

Soviet entry into arms control agreements has not been necessarily for the same purposes which the United States entered into them. Primarily, Soviets, in the past, agreed to arms control measures for the purpose of delaying western military advances. They have known that the U.S. views arms control agreements completely different. Henry Rowen, former chairman of the National Security Council stated, "Arms control does not have

much 'salience' in the Soviet Union. Observing the agreements is simply not important to the Soviet leadership."⁸ Notably Soviet advances have taken place during a period when arms control efforts should have prevented such buildups. In a historical sense, Soviet scientist Anatoly Fedoseyev, director of much of the Soviet ABM radar and new radar technologies, has indicated,

...that the ABM limitations being discussed...had no impact whatsoever on his work or that of his colleagues. Indeed he emphatically stressed that 'all those [pending agreements] had no effect on our business, no effect at all.' Agreements such as those, he⁹ argued, were between, 'the wolf and the sheep.'

Their goal was to limit or "preclude" the deployment of a large scale American ABM system. The Soviet position is such that, "they will not entertain proposals for deep cuts...while the United States refuses to set limits on SDI."¹⁰ This position, however, has not been entirely followed, as discussed below.

The Soviets view imperialism as the root of the most evil in the world. They maintain that, "only with the victory of socialism and the departure from the historic arena of imperialism, the last system of exploitation, will the basis, the main source of wars, be eliminated on the planet."¹¹ The arms control process is used to contain and restrict the capabilities of the West. Thereby "rendering them unable to resist efforts to eliminate them."¹²

More recently, the Soviet entry into the INF Treaty provides some conflicting signals with previous Soviet arms control statements. For example: General Secretary Gorbachev's statements at the Reykjavik summit in October 1986 and Soviet

negotiators at Geneva, linked the U.S. SDI program with INF and START talks. They demanded U.S. concessions on SDI research and a commitment not to withdraw from the 1972 ABM Treaty for progress in these other areas.

13

The Soviets aim has been to link arms control agreements to restrictions on the SDI program. They hoped to play on the peacemovement sympathies that the Soviets were for strong arms control measures but could not make such treaties while the U.S. proceeded with the SDI. They wanted public pressure to limit U.S. activities while the Soviets implied promises to make future arms control agreements. Playing on the West's strong desires for arms control measures to reduce the threat of nuclear war was an obvious means to achieve their goal to restrict or eliminate the SDI program. Since the Soviets are not in full compliance with the ABM Treaty, if restrictions were given for future arms control negotiations they would gain time to possibly develop and deploy an effective strategic defense system. This possibility is unacceptable to the Administration and would not achieve meaningful arms control agreements.

Interesting to note one year later, October 1987, Mr. Gorbachev continued to link the INF Treaty progress, START talks and not breaking out of the ABM Treaty, but did not link progress to restrictions on the SDI program. The results have been that the Soviets and the U.S. signed the INF Treaty in December 1987 and the U.S. did not make concessions on SDI research programs.

14

SOVIET BALLISTIC MISSILE DEFENSES

...it is unwise and even criminal for an army not to prepare to use all types of weapons, all means and methods of fighting which the enemy may.

V. I. Lenin

The Soviet Union denies that they have a SDI program in any form. They view the SDI concept as an aggressive attempt by the United States to put first strike weapons into space and in position to exploit a nuclear first strike against the Soviet Union. While it is obvious that any nation's military programs are generally highly classified, some valuable information can sometimes be learned. What the Soviets will admit is that they are conducting basic research into "existing and emerging BMD technologies." These programs, they maintain, unlike American ones are not provocative and destabilizing. The Soviet program is necessary to provide for the preservation of the motherland from imperialist nuclear attack.¹⁶ This is a good example of Soviet "doublespeak."

Some consider the Soviets a decade ahead of the United States in BMD systems. The question to ask, more importantly, is which side will deploy a system first and exploit it to the detriment of the other? The Soviets have invested numerous years of resources and scientific knowledge into their BMD systems and research. They have invested in several systems and potential systems, any of which by themselves are not as effective as the SDI systems proposed by the U.S. in its SDI program. What the Soviets have done is to invest in individual systems that may not completely defend their territory but will achieve some results,

even if small. They are investing in the sum of the parts to provide a synergistic approach. Their activities in upgrading the ABM system around Moscow and the reported testing of the SA-10 and SA-12 all support this assertion. The Office of Technology Assessment has noted that, "although the level of Soviet 'traditional' BMD technology probably does not exceed our own, the Soviets with a working BMD production base, are almost certainly better equipped in the near-term to deploy a large-scale, 'traditional' BMD system than [the U.S. is]."¹⁷

Soviet investment into laser technology is unequalled. They reportedly have 10,000 scientists working on this capability. The facilities at Dushanbe near Afghanistan and another site at Sary Shagan are reported to be major laser test installations. These sites have reportedly interfered with U.S. satellites in orbit. The work being conducted is believed to be both research into anti-satellite and ballistic missile systems. The Soviets could have working prototypes of lasers for ASAT and BMD defenses ready for large-scale deployment by the early 1990s.¹⁸

Particle beam research is also progressing at a steady pace. Their research into this potential weapon system began in the 1960s. Their goal is to have a system to disrupt or destroy satellites and a capability to destroy missile boosters or warheads by the 1990s. Research into kinetic energy weapons is also being conducted but deployment is not expected until the late 1990s or after the turn of the century.¹⁹

The Soviet program, which they consider good and proper advancement of technology for the purpose of continuing the

viability of the motherland, advances much of the same research being done under the U.S. SDI program. While the U.S. SDI is evil because of the "imperialistic" aims of the West, the Soviet endeavors are essential and peaceful. This is another good example of the Soviet "doublespeak" rhetoric.

SOVIET REACTION TO THE U.S. SDI PROGRAM

The Soviet leadership has already given the relevant instructions to competent organizations and scientists and we can say that our response [to the U.S. SDI] will be effective, less²⁰ costly, and may be realized in a shorter period.

Mikhail Gorbachev
December 10, 1985

The Soviets have taken several approaches in their attack against the U.S. SDI program. Perhaps central to their rhetoric was a report in Krasnaya zvezda on 10 April 1983 which indicated that the American comprehensive strategy was an "attempt to disrupt the strategic military parity between the USSR and the United States...."²¹ The U.S. SDI efforts are characterized as disruptive to the strategic balance. How can the Soviets accuse the U.S. when over the last decade alone they have spent approximately \$400 billion on strategic offensive and active and passive defensive programs. Their expenditures amount to about \$20 billion per program per year.²² Whereas the U.S. SDI research program has received approximately \$16 billion since 1983.²³

Soviet claims have focused on the offensive nature of the United States regarding the SDI. Former General Secretary Yuri Andropov said American intentions were,

...to acquire a first nuclear strike capability, to secure for itself the possibility of destroying--with the help of missile defenses--the corresponding strategic systems of the other side, that is, of rendering it incapable of a retaliatory strike. This is a bid to disarm the Soviet Union in the face of the U.S. nuclear threat.²⁴

Other Soviet officials and scientists have claimed that the U.S. SDI is offensive in nature. It will undermine arms control processes and lead to the militarization of space. Furthermore, SDI will leave computers in charge of mankind's fate and increase the likelihood of accidental nuclear war. These are just a few of the statements with only a grain of truth in them which the Soviets have propagandized in their war against the U.S. SDI program.²⁵

Outlined by the Institute for Foreign Policy Analysis the Soviet approach to the U.S. SDI program has six themes. They are:

1. Another manifestation of the aggressive U.S. drive for military superiority
2. SDI is an offensive program
3. SDI whips up the arms race and increases the risks of war
4. SDI violates the ABM Treaty and threatens arms control
5. SDI adversely affects the security of American allies
6. SDI is part of a U.S. effort to engage the Soviet Union in a high-technology race and to "spend the USSR into the ground" by forcing it to respond.²⁶

From the Soviet military perspective there are three broad avenues for them to respond to within these themes. The Soviets can upgrade their retaliatory/offensive forces to overwhelm and gain some countermeasure capability to the SDI. They could progress with their anti-satellite technology and field systems

designed to attack and counter the space-based portion of a U.S. SDI system. Finally, they could deploy their own BMD system. Each of these, however, carries extremely high cost and support²⁷ their sixth response theme--spend them into the ground.

If they decided to rely on offensive and retaliatory systems as their method of response to the U.S. SDI, several problems would be encountered. Given the Soviet's capacity to produce more ICBMs than they currently have an annual requirement for, such as flight testing requirements or stockpile aging replacements, they have a production capability to achieve this response to the SDI. However, deploying additional missiles to overwhelm the defense would have significant economic effects just when many of Secretary Gorbachev's programs for glasnost and perestroika are developing, such as economic ties to the Western Europe and trade overtures to Japan. Replacing current boosters with "fast burn" boosters could solve part of their problem but doesn't guarantee long-range solutions. The Defense Technologies Study Team concluded that the Soviets could "develop a fast-burn²⁸ booster within fifteen years without a crash program." They are using some of this same technology in their upgraded ABM interceptor, the SH-08.

Expanding their current ABM and anti-satellite systems may be the most cost effective counter to the SDI program if deploying large numbers of offensive missiles is not acceptable. Soviet ABM and ASAT technology is proven but relies on nuclear kill devices for reentering warheads and slow orbital maneuvers for intercepting satellites. Current research programs all have some

capability to drastically upgrade these systems. Laser and particle beam programs offer solutions to rapid intercept problems. New phased array radars being constructed and new mobile air defense systems with some BMD capability could be used to attack space-based defense systems.

Finally, breaking out of the 1972 ABM Treaty and deploying their own BMD system to defend the vastness of the Soviet Union has some validity. The cost, however, may be prohibitive. The size of the country will offer considerable obstacles to this option unless a system of less-than-total national defense is acceptable. The reported stockpiling of ABM missiles, mobile radars and new phased array radars support this as a definite option for the Soviets to use to counter the U.S. SDI program.

Historically, the Soviets have never put all of their "eggs in one basket." Neither have they, up till now, depended on one system of strategic defense. Each of their systems and those still in development will not provide 100% defense but each will provide some measure of defense. Combined together these systems will approach the total coverage they desire. Therefore, it is unlikely that they will opt for any one of these alternatives but will continue to spread their production capacity and military strategy over several programs to counter the U.S. SDI.

Politically, the Soviets have two options. The first is to repeat "the ABM gambit--that is, using both the arms control process and intense political pressure in an effort to slow down or halt work on the Strategic Defense Initiative."²⁹ They would have the intent of trading off systems for SDI while continuing

their research into advanced technology systems for BMD. Why should they adhere to a new or revised ABM Treaty when their track record for compliance of SALT I and II, and the ABM Treaty is fraught with violations.

Another political alternative and mentioned above is to withdraw from the current ABM Treaty. Such a move is highly unlikely as it would provide a clear path for the U.S. to begin unrestricted SDI testing and eventual deployment. Therefore, some type of adherence is likely to continue for some time. This will force the U.S. to politically and militarily bend over backwards to remain within the ABM Treaty guidelines. This may also affect the ability of SDI to obtain future funding in the coming lean budget years. Why should the Soviets withdraw from the treaty when Congressional pressures and restricted budgets may assist them in achieving their goals to eliminate the SDI program? They can continue their research and deployment activities as they have under the present ABM Treaty without political reprisals.

The Soviet military doctrine has not changed and for all intents will not change over the SDI. Their philosophy is too deeply entrenched in their society. Change will be slow even as Mr. Gorbachev tries to reform and improve openness. Basic to their ideology is that the Soviet way is peaceful and all measures to maintain that peaceful nature are acceptable--regardless of the methods used. While American methodology is deleterious to peace processes, they see SDI as offensive and their BMD systems as non-threatening. Why does the SDI give the

U.S. a first strike capability in the Soviet's mind yet their BMD deployed systems and research programs do not give them such a capability? Perception is the reason and their fundamental policy of survival of the motherland.

ENDNOTES

1. Steven P. Adragna, On Guard for Victory: Military Doctrine and Ballistic Missile Defense in the USSR, p. 24.
2. Ibid., pp. 22-23.
3. Nicholas L. Johnson, Soviet Military Strategy in Space, p. 168.
4. David B. Rivkin, Jr., "The Soviet Approach to Nuclear Arms Control," Survival, Nov/Dec 1987, p. 494.
5. Adragna, p. 59.
6. Rivkin, p. 495.
7. Johnson, p. 184.
8. Senator Malcomb Wallop and Angelo Codevilla, The Arms Control Delusion, p. 6.
9. Adragna, p. 25.
10. Paul C. Warnke and David Linebaugh, "Breaking the Deadlock," in Arms Control and the Strategic Defense Initiative: Three Perspectives, ed. by the Stanley Foundation, p. 24.
11. Dmitry Mikheyev, The Soviet Perspective on the Strategic Defense Initiative, pp. 30-31.
12. Ibid.
13. Jerry F. Hough, "Soviet Interpretation and Response," in Arms Control and the Strategic Defense Initiative: Three Perspectives, ed. by the Stanley Foundation, p. 5.
14. Yost, pp. 220-223, 234.
15. Adragna, p. 53.
16. Adragna, pp. 51-54.
17. Yost, p. 65.

18. U.S. Department of Defense, Soviet Strategic Defense Programs Report, pp. 12-14.
19. Ibid., pp. 14-16.
20. Mikheyev, p. 78.
21. Adragna, p. 38.
22. U.S. Department of Defense, Strategic Defense Initiation Organization, Report to the Congress on the Strategic Defense Initiative, April 1988, p. B-1.
23. William J. Broad, "The Star Wars Program Prepares for a Year of Reckoning," New York Times, 29 Nov 1988, p. C1.
24. Mikheyev, pp. 26-27.
25. Ibid., p. 27.
26. Adragna, pp. 38-42.
27. David Holloway, "The Strategic Defense Initiative and the Soviet Union," in Strategic Defense Initiative, ed. by P. Edward Haley, pp. 144-145.
28. Ibid., p. 145.
29. Adragna, p. 55.

CHAPTER VI

THREATS AND MAINTENANCE OF STRATEGIC STABILITY

Our present deterrent triad--the three-legged stool of land-based missiles, airplanes, and submarines--has become wobbly in recent years.¹

George Keyworth
Science Advisor to
the President, 1984

"Stability refers to that condition which minimizes the probability of nuclear war or the highly provocative behavior that might lead to nuclear war."² The use of any measure to reduce the probability of war is stabilizing. Things which disrupt the military balance are destabilizing. Critics of the SDI maintain that as long as mutual vulnerability exists, stability is assured. Proponents of the SDI see the nuclear arms race in a differing light. They believe that there is a better way to provide stability by not relying on nuclear arsenals to threaten an adversary. When both adversaries have such a defensive capability, it makes little sense to keep large inventories of nuclear weapons.

The technological breakthroughs since the 1972 ABM Treaty have changed the way that we must think about mutual vulnerability and what is stabilizing. Improvements in weapon systems have fundamentally altered the assumptions made about arms control in the 1960s and 1970s.³ It is time to renew our assumptions surrounding MAD and add new facts to our policies which direct our approach to deterring nuclear conflict. The

evolving threat has changed and the solution to it must change in a dynamic manner. "Arms control cannot impose significant constraints on advances in weapons technology, unless both parties are willing to accept those limits."⁴ Change in this age of micro-industrialization and information explosions cannot be inhibited. Even if certain technologies were to be held stagnant by treaties, other technologies would surpass the new of today for that of tomorrow. Just as the ABM Treaty was negotiated with a view of the world in 1972, certain advances in missile guidance, propulsion, and materials have left that document with many ambiguities.

CRITICS OF THE SDI

The critics of the SDI make a number of charges against achieving a strategic defense claiming the initiative creates strategic instability. First, they say that as we deploy a defensive system, the U.S. would be vulnerable to a preemptive strike from the Soviets. They assume an attack during deployment⁵ would be more effective than such an attack today.

Second, the Soviets would attack the system in space. SDI, the critics charge, would pose an unacceptable threat to the Soviets because the U.S. would gain a first strike advantage. Additionally, an attack in space on defensive systems would not be perceived with the same gravity as one against more tangible sovereign territory, vital U.S. interests, or populations. Thus, the program's critics think the U.S. would be less likely to respond to such aggression.⁶

Third, reducing the success of a nuclear attack will increase the chances of a conventional attack against the U.S. and its allies. A conventional attack in Europe by an obviously superior Warsaw Pact force would be devastating. NATO's dependence on nuclear weapons and the U.S. strategic missile arsenal to backup NATO's credibility would be enhanced by a new extended U.S. deterrent. Before SDI deployment there is a reluctance to employ nuclear weapons in support of NATO against the Warsaw Pact because of the lack of escalatory control. With a defensive shield, the U.S. would have credibility to back its policies in Europe with nuclear weapons and better escalation controls.⁷

Fourth, the threat of MAD and mutual vulnerability would be lost and would give one side an unquestioned edge. The current situation is increasingly risky; mutual defenses would eliminate a first strike capability by either. Finally, critics see an on orbit defensive system as an automated monster ready to misfire and attack anything launched from the surface. This assumes no safeguards are incorporated or ignored, which would not be a logical assumption. Critics see the SDI as destabilizing at every turn. Their premise is based on the assumption that deterrence is predicated only on mutual vulnerability.⁸

Other critics state that the SDI would not be leakproof; therefore, a worthless system. The response is simple. A four layered defense that is only 30 percent effective at each layer would be 76 percent effective overall. A system which is 40 percent effective per layer would achieve 87 percent effectiveness.⁹ It is obvious that stopping 76 or 87 percent of

a nuclear attack would be infinitely better than allowing 100 percent of the warheads to reach their vulnerable targets.

One significant point of debate has focused on the numbers of space based satellites that would be required to support a SDI defense. The numbers have ranged as high as 2400 by the Union of Concerned Scientists (UCS). However, the UCS then lowered their estimate to 800 satellites and has since revised their estimate to 300. Their point, despite the drastic drop in numbers required, is that the system is enormous and expensive. The Office of Technology Assessment has another figure which is more attuned to the defense systems envisioned, that being 160 satellites. Critics have also noted a simple countermeasure for the Soviets to employ would be to roll out more of their SS-18 missiles and overwhelm the system. The logic here is that for every one more missile deployed the defenses must go up proportionally. Work at Los Alamos and confirmed at Livermore Labs supports the contention that deployment of more defenses does not go up in direct proportion but "goes up approximately in proportion to the square root of the number of missiles. For example: Based on an 80 percent effective defense and the current Soviet missile inventory:

...suppose the Soviets decided they wanted to build enough missiles so that the number of missiles getting through our defensive screen would be the same as the number that would have reached the United States if we had no defense. That is what "overwhelming the defense" means. To do that, the Soviets would have to build 5000 additional missiles and silos. The... square root rule tells us...the United States could counter those ...new missiles with only 100 additional satellites.

The cost advantage is clearly in support of building a defensive system rather than more offensive capability.

Another misconception held by many is that SDI must be 100 percent effective. Initially that probably was the supposition underlying the SDI. After much analysis and realistic appraisal such a completely effective defense is probably not realistic. Even a system of four layers (boost, post-boost, mid-course and terminal) each 70 percent effect would still allow one warhead in every 1000 through. But, 100 percent effectiveness should not be the sole goal or one that if not achieved would then scrap the whole system. If the Soviet military planner has to face a U.S. defensive system and design an attack to achieve success (success being defined as knocking out the U.S. retaliatory capability and command and control systems to respond) the planner quickly faces a tremendous amount of uncertainty. The alternatives are few. To have the same effectiveness after strategic defenses were deployed as before, the Soviets must add thousands of new offensive missiles. As discussed above, however, the defense is cheaper at the margins based on the rule of square roots. Which according to Paul Nitze means:

that it should cost the U.S. less to build our defense than it cost the Soviets to build their arsenal, and that it should cost the U.S. less to upgrade our defense than it costs the Soviets to upgrade their arsenal.

Defensive deterrence then takes on a new dimension that has not been available under the MAD philosophy. It requires only that the defense work well enough to cause the Soviet not to have confidence that their attack would be successful. Even a 50

percent effective defense would cause enough uncertainty for an aggressor that he could not be assured of knocking out the U.S. retaliatory capability. Therefore, such lack of success would open that country to massive nuclear strikes by the other. This uncertainty assures deterrence is maintained.¹²

There needs to be an understanding of SDI in the context of changing technology and new threats. Not having our retaliatory land based missile systems available, because of Soviet hard target kill improvements, is unacceptable. Technological improvements in missile accuracy gives the Soviets the ability to destroy the U.S. retaliatory fleet with their first salvo. Because of this vulnerability, other means to stabilize deterrence must be examined if that retaliatory capability must be maintained while we proceed with ways to reduce offensive nuclear systems. As mentioned earlier, our defensive systems must be cost effective at the margins.

President Reagan's decision to pursue the SDI is just such an alternative, and the research gained through the SDI will provide future Presidents the information necessary to take another path to enhance nuclear deterrence and stability. The long-term importance of the SDI is that it offers a way to reverse long standing "military trends with a better, more stable basis for deterrence and by providing new and compelling incentives to the Soviet Union for seriously negotiating reductions in offensive nuclear arsenals."¹³

The ability of the Soviets to maintain and control crisis escalation and to rapidly win is basic to their military

doctrine. Measures that reduce Soviet confidence in controlling or quickly winning enhance stability. It would be foolish for some nation to attempt an attack against a well defended U.S. retaliatory force for fear of suffering a U.S. response.¹⁴

WHY NOT THE SDI?

Some critics argue that the SDI would be impossible to build and would be prohibitively expensive, that it could be overwhelmed by Soviet countermeasures, that it would be destabilizing, and that it would force the Soviets to follow the U.S. lead in defensive systems. These are self-contradictory propositions. As Mr Brzezinski eloquently points out,

if the initiative is technically unfeasible, economically ruinous, and militarily easy to counter, it is unclear why the SDI would still be destabilizing and why the Soviets should object to America's embarking on such a self-defeating enterprise, and even less clear why the Soviets would then follow suit in reproducing such an undesirable thing for themselves.¹⁵

Moscow's undertakings to derail the SDI are based on the Soviets' inability to compete in such a program. Therefore, they are scared of our developing and then deploying a more effective one ahead of them in spite of their present ABM deployment and research.

The Soviets have the beginnings for a national strategic defense while the U.S. is at the earliest stages of research. This research is worrisome to the Soviets. They want to force the U.S. to eliminate research and testing. The U.S., however, has resisted negotiating SDI research because it would be

impossible to verify compliance of no research and testing activities in laboratories. Today, the Soviets continue to develop systems in the laboratory and field experiments in spite of their insistence that the U.S. stop its research. The two-way street they propose is not truly a two-way street.¹⁶

The basic objective of SALT was to provide a vehicle to reduce the ever growing threat of nuclear conflict and the arsenals needed to support this conflict. The U.S. tact was to negotiate real reductions in nuclear weapons. The link between SALT and the ABM treaty was to enhance stability through MAD. The last 15 years, however, have seen these ideals defeated through improvements in missile accuracies and Soviet deployment of the world's only ABM system which is poised for expansion.¹⁷ The ABM treaty was based on the idea that limits on defensive systems would lead to corresponding reductions in offensive capabilities. This has yet to be proven and the Soviets, before the SDI, were unwilling to negotiate in good faith.¹⁸ The INF Treaty may be the first good faith accord in three decades but recently verification efforts at the SS-20 missile motor production facility did run into some problems because this is the same site where the SS-25 motors are being built.

The return of the Soviets to the negotiating table at Geneva and their demand to link offensive and defensive systems reflect great concern they have for U.S. technology and the SDI. They appear to be willing to talk of reductions only in efforts to restrain SDI. President Reagan, however, was clear, "Our SDI research is not a bargaining chip. It's the number of nuclear

missiles that need to be reduced, not the effort to find a way to defend mankind against these missiles."¹⁹

ENDNOTES

1. George A. Keyworth, "Strategic Defense: Catalyst for Arms Reductions," in Arms Control and Strategic Stability, ed. by William T. Parsons, p. 19.
2. Keith B. Payne, Strategic Defense: "Star Wars" in Perspective, p. 96.
3. Kenneth Adelman, Dr., "The Impact of Space on Arms Control," Defense Science 2003+, Apr/May 1985, pp. 41-48.
4. Frank J. Gaffney, Jr., "New Weapons Technology: The Challenge for Arms Control," in Arms Control and Strategic Stability, ed. by William T. Parsons, p. 41.
5. Payne, pp. 95-123.
6. Ibid.
7. Ibid.
8. Ibid.
9. Ibid., pp. 170-171.
10. Robert Jastrow, "The War Against 'Star Wars'," in The Star Wars Debate, ed. by Steven Anzovin, p. 82.
11. "SDI Making America Secure," National Review, Apr 1988, p. 42.
12. Ibid., p. 41.
13. James A. Abrahamson, Lt Gen, USAF, "The Strategic Defense Initiative and Its Relationship to Deterrence," Defense 87, Jan/Feb 1987, pp. 22-23.
14. Payne, pp. 106-110.
15. Zbigniew Brzezinski, Game Plan, p. 153.
16. U.S. Department of Defense, Soviet Military Power, 1986, pp. 41-51.
17. Payne, p. 162.
18. Adelman, pp. 44-46.

19. Jeremiah O'Leary, "Reagan: 'Star Wars' Key to Arms Pact,"
Washington Times, 14 July 1986, p. B1.

CHAPTER VII

CONCLUSION

Those olden Knights are still faced off with their most fearsome weapons poised to strike the other. Each knowing the other can't parry an attack. Each waiting for the other to strike before he, himself, retaliates. The concept is mutual assured destruction through mutual vulnerability. For as sure as either strikes a blow, both will be no more. This futile situation has existed for over 40 years. Both superpowers have professed their strategic policies of nuclear deterrence and made treaties in an attempt to maintain this mutual vulnerability. It was technology that brought us change: the atomic bomb lead to the hydrogen bomb; solid fuel missiles replaced liquid fuel missiles; solid fuel systems will be replaced by hyper-velocity missiles; and science-fiction has become reality. Scientific discovery cannot stand still nor would it if it could.

President Reagan's SDI speech marked a new era in strategic thought. For the first time since the Eisenhower administration the U.S. can possibly move toward true defense. Technology and industrial capability have caught up with our heartfelt desires to defend ourselves and our vital interests from the nuclear threat. Before now it was only a dream; a desire to truly meet offensive attacks with a real defense that is credible.

There are many arguments against ballistic missile defense. Critics say SDI is destabilizing and will increase the

probability of conflict, either nuclear or conventional. This can not be true. The arguments are based on the mistaken assumption that stability and deterrence are based on mutual vulnerability. Times have changed; technology has changed; and the international environment has changed. Things do not stay equal and change must take place. New concepts and ideologies must replace the out-dated and out-moded precepts of the 1950s. This paper has discussed many of these issues and argued that it is time to rethink our understanding of MAD. Treaties written under this policy were designed to maintain vulnerability but have not reduced the likelihood of war. The conditions and values of arms control must likewise change with the dynamic environment of today's realities in weaponry, technology, and arms control compliance.

Past understandings were based on the hope that the other guy would not attack because the attacked country would still have retaliatory capability to strike back and cause unacceptable levels of damage to the aggressor. Senator Wallop in his book has argued that, "Arms control...has failed as a means of constraining the Soviet Union and succeeded as a means of constraining the U.S." ¹ Therefore, arms control treaties for the sake of making agreements has not always been, nor may they in the future be, good and equitable.

The advances in missile design and technology have improved accuracies to the point where an aggressor can be assured of severely affecting, if not totally eliminating, the attacked country's land based retaliatory capability. Since MAD, in its

previous context, was limited we must find other ways to protect ourselves, our vital interest and our allies.

In 1964 Major General Talenskiy, Soviet General Staff, defended the necessity of strategic defenses by saying:

...anti-ballistic missiles are intended solely for the destruction of the opposing side's missiles and are not intended for the destruction of any objects on the opponent's territory. Therefore, anti-ballistic missile systems are defensive weapons in the full sense.... For a peace-loving state, anti-ballistic missile systems are merely a means of strengthening its security.²

Since this time, the Soviets have become increasingly secretive about their strategic defensive programs. What has appeared in unclassified sources has shown a concerted effort on their part to build a network of defenses to protect the motherland. The issues surrounding defensive systems, technology and treaties to limit them are full of Soviet "doublespeak." Their definition of peaceful coexistence demonstrates that they wish to prevent a direct confrontation with the U.S. and prefer an indirect method of fighting capitalism.³ Treaties provide the Soviets with a vehicle which constrains their opponents while they selectively continue to develop treaty-restricted capabilities.

SALT I and 1972 ABM treaties provided a foundation for mutual restraint in deploying additional ballistic missile systems and defenses to those systems. Until today the technology to have a "real" impact on neutering an offensive attack has not been viable. Today and tomorrow, however, the situation is changing faster than believed possible. Previous restraint is no longer as valid because of improved accuracies of missiles in the 1980s.

Those treaties need to be re-thought and revised to account for the realities of today and what may exist or is capable of existing tomorrow. Mutual defense would enhance negotiations for true offensive weapons reductions and provide for protection from a surprise attack or an attack by a third party.

The SDI is only a research program which can offer an alternative to responding in kind when attacked. The critics lead us to believe that the SDI is threatening. How can that be? The Soviets have been pursuing an ABM program for 25 years. They have the production capacity and probably the stockpiles to "break out" by deploying a national defense system. The Krasnoyarsk radar will be a vital segment in that system unless Mr. Gorbachev follows through with his 7 December 1988 speech to the United Nations to dismantle it. Soviet air defense systems such as the SA-10 and SA-12 both can fill the gap in many areas to provide a national defense. Rapid reload capability or near rapid reload capability of Soviet ABM interceptors threaten the tenets of the 1972 ABM Treaty by skewing the vulnerability of the Soviets. Arms control agreements on space weapons and ABM technology must be addressed along with the SDI.

As SDI will give future Presidents alternatives to maintain deterrence stability and the status quo, the initiative can not be taken in isolation of other arms control endeavors. On the other hand, arms control for the sake of arms control can not be promoted in lieu of the SDI.

If deterrence were to fail today, our current strategy is limited to nuclear offensive retaliation. This would probably

result in the destruction of the United States and the majority of the Soviet Union, plus the likelihood of a planetary catastrophe. If deterrence fails we all lose! Strategic defenses may offer a realistic alternative to this danger. By relying on the SDI, it is less likely that deterrence will fail, because an attacker could not hope that his forces could do the damage necessary to totally destroy the other's retaliatory forces. Even so, arms control today and a transition to a SDI type of defense is essential to keep rational actors rational. Regardless of the SDI or advances in accuracy of offensive systems, the syndrome of use-them-or-lose-them must never become an alternative to the dynamics of offensive weapons technology.

The bottom line is obvious. For future generations to overcome the nuclear strategies based on mutual vulnerabilities, the transition to strategic defensive systems in conjunction with true arms control regimes is the only logical methodology to achieve mutual assured survival. Arms control objectives must reduce the probability of war, reduce the destructiveness of war and minimize the cost of maintaining an adequate military establishment. Therefore, negotiations must be an integral part of the U.S. (and the West's) dealings with the Soviet Union.

The U.S. and Soviet Union must enter into this dialogue to resolve problems with past arms control initiatives and move to reduce the lack of understanding on each other's defensive programs. After this initial step is undertaken, other steps can be taken to develop and deploy a defensive system to allow mutual force reductions in nuclear and, eventually, conventional arms.

Both nations must strive for defense over offense as being realistic alternatives to the offensive arms race and mutual vulnerability.

Strategic defense is not a new idea but rather one whose time has finally come!

ENDNOTES

1. Senator Malcomb Wallop and Angelo Codevilla, The Arms Control Delusion, p. 12.

2. Steven P. Adragna, On Guard for Victory: Military Doctrine and Ballistic Missile Defense in the USSR, pp. 23-24.

3. Ibid., p. 32.

BIBLIOGRAPHY

1. Abrahamson, James A. General, Strategic Defense Initiative Program: The Why and What. Audio tape of speech given to the Greater New York Society of the American Institute of Aeronautics and Astronautics, 18 June 1984.
2. Abrahamson, James A., Lt Gen, "The Strategic Defense Initiative and Its Relationship to Deterrence," Defense 87, Jan/Feb 1987, pp. 20-28.
3. Adelman, Kenneth, Dr., "The Impact of Space on Arms Control," Defense Science 2003+, Apr/May 1985, pp. 41-48.
4. Adragna, Steven P., On Guard for Victory: Military Doctrine and Ballistic Missile Defense in the USSR, New York: Pergamon-Brassey, 1987.
5. Anzovin, Steven, ed. The Star Wars Debate. Vol 58, New York: Wilson Company, 1986. pp. 32-52, "The Technologies for Ballistic Missile Defense," by James C. Fletcher. pp. 74-90, "The War Against 'Star Wars'," by Robert Jastrow.
6. Azrael, Jeremy and Sestanovich, Stephan. "Superpower Balancing Acts." Foreign Affairs: America and the World 1985, Vol 64, 1986, pp. 479-498.
7. Broad, William J. "The Star Wars Program Prepares for a Year of Reckoning." New York Times (New York), 29 Nov 88, p. C1.
8. Brown, Harold. "Is SDI Technically Feasible." Foreign Affairs: America and the World 1985, Vol 64, 1986, pp. 435-454.
9. Brzezinski, Zbigniew. Game Plan. Boston: Atlantic Monthly Press, 1986.
10. Charlton, Michael. The Star Wars History. London: BBC Publications, 1986.
11. Dobbs, Michael. "Gorbachev Announces Troop Cut of 500,000." Washington Post (Washington). 8 Dec 1988, p. A1+.
12. Donohue, George L. The Star Wars Dilemma. (A speech presented in the Newman Forum Lecture series at the University of Minnesota, 12 Nov 86), printed: June 1987.
13. Graham, Daniel O., Lt Gen, USA (Ret.) and Fossedal, Gregory A. A Defense That Defends. Old Greenwich: Divin-Adair Publishers, 1983.
14. Gray, Colin S. Dr. "Emerging Policy Triad." Defense Science 2003+, Vol 4, Apr/May 1985, pp. 26-40.

15. Gray, Colin S. Dr. "Moscow Is Cheating." Foreign Policy, No. 56, Fall 84, pp. 141-152.
16. Gray, Colin S. Dr. "Why the SDI is Good for Arms Control." Defense Science 2004+, Vol 5, Feb/Mar 1986, pp. 17-24.
17. Guertner, Gary L. and Snow, Donald M. The Last Frontier. Massachusetts: D. C. Heath and Company, 1986.
18. Guertner, Gary L. "Strategic Defense: New Technologies, Old Tactics." Parameters, Vol XV, Autumn 1985, pg 16-22.
19. Haley, P. Edward and Merritt, Jack, ed. Strategic Defense Initiative. Boulder: Westview Press, 1986. pp. 37-41: "On the Road to a More Stable Peace," by Paul H. Nitze. pp. 139-150: "The Strategic Defense Initiative and the Soviet Union," by David Holloway. pp. 155-159: "The Nuclear and Space Arms Talks: Where We are After the Summit," by Paul H. Nitze.
20. Johnson, Nicholas L. Soviet Military Strategy in Space. London: Janes Publishing Company, Ltd., 1987.
21. Kincade, William H. "Arms Control or Arms Coercion?" Foreign Policy, No. 62, Spring 1986, pp. 24-45.
22. Kiser, John W. "How The Arms Race Really Helps Moscow." Foreign Policy, No. 60, Fall 1985, pp. 40-51.
23. Kissinger, Henry. The White House Years. Canada: Little Brown & Company, 1979.
24. Lodol, Jan M. "An Arms Control Agenda." Foreign Policy. No. 72, Fall 1988, pp. 152-172.
25. Mikheyev, Dmitry. The Soviet Perspective on the Strategic Defense Initiative. Washington: Institute for Foreign Policy Analysis, Inc., 1987.
26. Montbrial, Thierry de. "The European Dimension." Foreign Affairs: America and the World 1985, Vol 64, 1986, pp. 499-514.
27. Nixon, Richard M. "Superpower Summitry." Foreign Affairs, Vol 64, Fall 1985, pp. 1-11.
28. O'Leary, Jeremiah. "Reagan: 'Star Wars' Key to Arms Pact." Washington Times (Washington), 14 July 1986, p. B1.
29. Parsons, William T., ed. Arms Control and Strategic Stability. New York: University Press, 1986. pp. 3-16: "Effective Arms Control: Challenge of the 1980s," by Robert C. McFarlane. pp. 17-26: "Strategic Defense: Catalyst for Arms Reductions," by George A. Keyworth, II. pp. 29-32: "The Strategic Defense Initiative," by Edward T. Gerry. pp. 39-45: "New Weapons Technology: The Challenge for Arms Control," by

Frank J. Gaffney, Jr. pp. 49-57: "Arms Control Policy Stability and Compliance," by Keith B. Payne.

30. Payne, Keith B. Strategic Defense: "Star Wars" in Perspective. Lanham: Hamilton Press, 1986.

31. Perle, Richard N. "The Meaning of Reykjavik." Defense 87, Jan/Feb 87, pp. 12-19.

32. Reagan, Ronald (President). Letter to Congress: The President's Unclassified Report to the Congress on Soviet Noncompliance with Arms Control Agreements. Office of the Press Secretary, 1 Feb 85.

33. Reagan, Ronald (President). "A Message From the President." Defense Science 2003+, Vol 4, Apr/May 1985, pp. 13-14.

34. Rivkin, David B. Jr. "The Soviet Approach to Nuclear Arms Control." Survival, London: International Institute for Strategic Studies Nov/Dec 87, pp. 483-510.

35. Rivkin, David B. Jr. "What Does Moscow Think." Foreign Policy, No. 59, Summer 85, pp. 85-105.

36. Schweikart, Larry and Dalglish, D. Douglas. "Why the Soviets Really Fear SDI." National Defense, Vol VXXII, Dec 1987, pp. 64-69.

37. "SDI: Making America Secure." National Review, Vol XI, 1 Apr 1988, pp. 36-45.

38. Smith, R. Jeffrey. "Early Deadlines on Arms Issues." Washington Post (Washington), 30 Nov 88, pp. A21.

39. Smith, R. Jeffrey. "Gorbachev's Hostility to Reagan's SDI Vision Made Clear at Summit." Washington Post (Washington), 20 Oct 1986, pp. C4-C6.

40. Stanley Foundation. Arms Control and the Strategic Defense Initiative: Three Perspectives. Iowa: 1985. pp. 5-13: "Soviet Interpretation and Response," by Jerry F. Hough. pp. 14-23: "A New Dilemma for NATO," by Stanley R. Sloan. pp. 24-31: "Breaking the Deadlock," by Paul C. Warnke and David Linebaugh.

41. Teller, Edward Dr. "Science and Technology in SDI." Defense Science 2003+, Vol 4, Apr/May 1985, pp. 16-25.

42. Ulam, Adam B. "Forty Years of Troubled Co-existence." Foreign Affairs, Vol 64, Fall 85, pp. 12-32.

43. United Nations Institute. Disarmament Problems Related to Outer Space. New York: United Nations, 1987.

44. U.S. Congress, Office of Technological Assessment. Ballistic Missile Defense Technologies, Summary. Washington: Government Printing Office, 1985.
45. U.S. Department of Defense, Strategic Defense Initiative Organization. Report to the Congress on the Strategic Defense Initiative. Washington: April 1988.
46. U.S. Department of Defense. Soviet Military Power, 1986. Washington: Government Printing Office, March 1986.
47. U.S. Department of Defense. Soviet Military Power, 1987. Washington: Government Printing Office, March 1987.
48. U.S. Department of Defense. Soviet Military Power, An Assessment of the Threat, 1989. Washington: Government Printing Office, 1988.
49. U.S. Department of Defense. Soviet Strategic Defense Programs Report. Washington: Government Printing Office, Oct 1985.
50. Wallop, Senator Malcolm, and Codevilla, Angelo. The Arms Control Delusion. San Francisco: Institute for Contemporary Studies Press, 1987.
51. Weinberger, Casper W. The Potential Effects of Nuclear War on the Climate, a report to the U.S. Congress, March 1985.
52. Weinberger, Casper W. "U.S. Defense Strategy." Foreign Affairs, Vol 64, Spring 1986, pp. 675-697.
53. Wieseltier, Leon. "Madder Than Mad." The New Republic, Vol 194, 2 May 1986, pp. 18-22.
54. Yost, David S. Soviet Ballistic Missile Defense and the Western Alliance. Cambridge: Harvard University Press, 1988.